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ORIGINAL ARTICLES.

A CASE OF PERITHELIOMA OF THE CHOROID.

By ADOLF ALT, M.D.,
ST. LOUIS, MO.

On September 20th, 1909, Mrs. A. S., 62 years of age, came to the St. Louis Mullanphy Hospital on account of a blind and extremely painful right eye. She stated that two years previously this eye had been severely injured by a snowball. The injury had been followed by a very severe inflammation and partial loss of vision. She had treated it herself with home remedies and after about 2 months the inflammation had subsided, but vision ever since was poor. About 2 months before entering the hospital she had suddenly lost sight in this eye altogether and a week ago it had become so painful that she had been unable to eat or sleep.

When first I saw her she was in bed evidently suffering excruciating pain. The lids were oedematous, the conjunctiva highly injected and chemotic. The pupil was about twice the normal size, the anterior chamber was very shallow. The lens was slightly opaque. No reflex could be obtained from the fundus. $T=+2$.

Whether this glaucoma was a primary or a secondary one was, of course, not definitely to be made out. $V=0$.

She was averse to the immediate removal of the eye and was given eserine. This seemed to make her condition a little more comfortable for a day or two, but then the severe pain returned and she finally though reluctantly consented to the removal of the eye when I told her that from the history of the case I supposed that I should find a tumor growing within it. The operation and healing were uneventful.

On cutting the eyeball in two I found the retina in toto detached and a tumor springing from the temporal side of the choroid midway between the optic nerve entrance and the æquator. The tumor sat on the choroid with a broad base, grew thinner for some distance and then spread out again into a round part, so that in the section it did not look unlike a head and shoulders. (Fig. 1.)

In the microscopical sections which pass through the center



FIG. 1.

of the tumor it is seen to be very vascular. At the periphery of its base large vessels are seen to grow into it from the deeper layers of the choroid. While in the broad part of the tumor these vessels run almost in straight lines and parallel to each other toward the interior, in the smaller round portion they assume a very varied course (Fig. 2). In the posterior part of the tumor, and here and there in the round portion, there are, also, large cavities filled with blood, evidently haemorrhages.

In the probably oldest parts of the tumor, near the choroid the tissue seems in places very dense and appears to be composed

of tightly compressed spindle cells. Even in these densest portions a number of bloodvessels are found, but most of them are almost or totally obliterated.

All of the bloodvessels are surrounded by a thick mantle of cells. This is particularly well seen in the more recent round growth. This part consists really of nothing but innumerable bloodvessels, each in its whole course surrounded by a thick covering of cells (Fig. 3). This gives the tumor an appearance which is so much like that of a glioma that several gentlemen to



FIG. 2.

whom I showed the specimens at once made the diagnosis of glioma. However, the character of these cells is quite different from glioma cells, neither does the tumor contain those partly necrotic cells further away from the bloodvessels which we see in glioma. The cells giving the tumor under consideration its peculiar character are considerably larger than glioma cells, have a flat oblong or round protoplasma body and an oval nucleus. They are evidently endothelial cells and have taken their origin from the perithelial cells accompanying the bloodvessels. This

is plainly visible in the newest portions of the tumor. In the older ones the increase in the cellular elements has gone on to such an extent that the bloodvessels lie in a more or less solid mass of these cells, in which still here and there a bloodvessel shows its probably more recent cell mantle. (Fig. 4.)

While here and there a pigmented (probably epithelial) cell is to be found, the chromatophores of the choroid were evidently in no way actively concerned in this growth, on the contrary they have been destroyed. The character of the tumor is that of an absolutely unpigmented one.

The posterior part of the tumor is covered by the choriocapil-

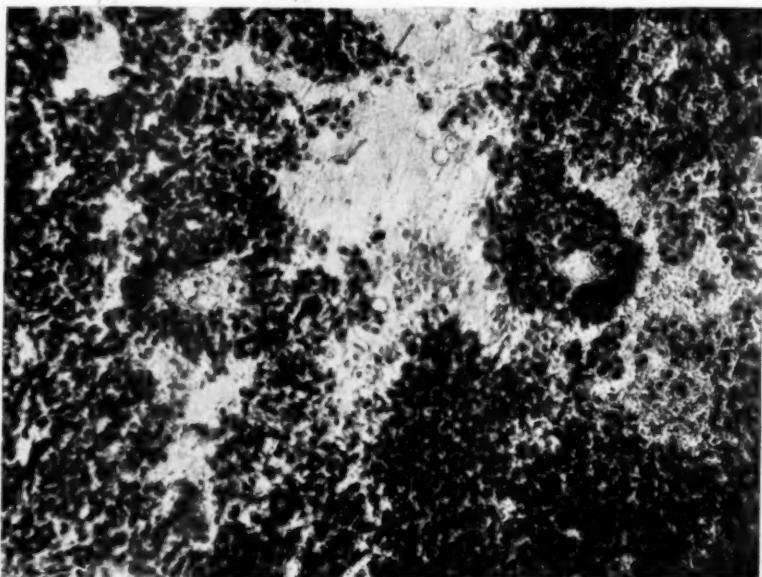


FIG. 3.

lary layer and the lamina vitrea. This membrane had at one time evidently been stretched by the growth and by its resistance helped to render the tissue of the posterior part of the tumor more dense. At a later date it gave way to the pressure of the growing tumor and the newest part (the head on the shoulders) spread into the space between the choroid and detached retina which was filled with the usual albuminoid exudation. This round part of the tumor grew furthermore wider than the opening in the lamina vitrea so that a section like our Figure 1 shows a dividing line between head and shoulders which is represented by the choriocapillaris and lamina vitrea.

From the foregoing I think that this angiosarcomatous tumor is a perfect example of the rare variety called perithelioma.

Parsons (Pathology of the Eye, Vol. II. p. 502) gives an illustration of a sarcoma of the choroid which is almost an exact reproduction of the tumor here detailed, at least as regards the peculiar shape. But his case was one of melanotic sarcoma. He also found the broad part covered by the lamina vitrea of the choroid and the torn edges of this membrane surrounding the base of the round innermost part of the tumor.

Concerning angiosarcomatous tumors like ours he says: "In some cases the cells are arranged very regularly in layers around



FIG. 4.

thin-walled vessels so that a tubular structure is seen; these form a group of the so-called angiosarcomata. In sections they show a superficial resemblance to glioma."

And further on: "Kerschbaumer regards nearly all haemangioma of the eyes as perivascular, only a few being intravascular. They only occur in the posterior part of the choroid. In 10 out of 11 cases they were associated with disease of the choroidal vessels. They grow slowly, showing few mitoses or multi-nuclear cells. They commence by hyperplasia of the perithelium of the vessels of Haller's and often Sattler's layers; in some cases

the walls of the capillaries of the choriocapillary layer show hyaline thickening. This is also a common feature in the vessels of the growth and often leads to narrowing and obliteration of the lumina."

In the original work on choroidal tumors Putiasta Kerschbaumer lays particular stress on the perithelial origin of these angiosarcomata and speaks at length of degenerative changes in the choroidal vessels.

There are no marked degenerative changes to be found in the choroidal vessels in our tumor. As stated before, our tumor evidently has taken its origin from the larger choroidal blood-vessels; at least, in the part which has not broken through into the interior the tumor is covered with the atrophic inner layers of the choroid and the lamina vitrea. There are many colloid bodies throughout on the inner surface of the choroid and several large ones partly calcified lie on the base of the tumor.

The optic nerve shows marked atrophy of the nervous and hypertrophy of the connective tissue elements and is in a recent state of round cell infiltration. The central retinal artery shows an endoarteritis and periarteritis, probably of older date. The detached retina shows nothing remarkable.

In the microscopical sections the lens lies close to the posterior surface of the cornea, separated from it only by the highly atrophic, or at least very much compressed, iris. The latter is, perhaps, the correcter view since numerous bloodvessels (veins?) are still visible within it, being filled with blood. Its whole anterior surface is adherent to Descemet's membrane, and the iris angle is perfectly obliterated.

The ciliary body shows hyaline degeneration of the remnants of its processes and is in a state of total atrophy. The crystalline lens shows signs of beginning cataract formation.

There are several gaps in the continuity of Bowman's layer. Of course, it is impossible to say whether these were produced by the original injury or are due to stretching during the severe glaucomatous attacks. Descemet's membrane is intact.

That an injury may be the starting point for the growing of an intraocular tumor is nowadays pretty well accepted, at least quite a number of cases of intraocular tumors are now known, the growth of which was noticed after an injury. The history of our case also shows an injury preceding the growth of an intraocular perithelioma. What the injury was, it is not possible to say definitely. Yet, among the most frequent results of an injury to the eye from a missile like a snowball, a rupture

of the choroid is surely to be counted. Since our tumor is an angiosarcoma, it is not impossible, it seems, that it owes its origin to such an isolated rupture.

In general our tumor corresponds almost exactly to one described as angiosarcoma of the choroid by Guenther (A. f. A. XXV. p. 136, 1892). While it seems certain that in our case the tumor began in the outer layers of the choroid, Schieck in a similar case (Ein weiterer Beitrag zur Lehre von den Leukosarcomen der Choriocapillaris, A. f. O. XLVIII, 1899) was convinced that its origin was in the choriocapillary layer. I see no reason why such tumors should in their origin be always confined to a certain set of bloodvessels.

HIGH MYOPIA WITH CATARACTOUS LENS.

A CASE IN WHICH SIMPLE EXTRACTION OF THE LENS IN THE
CAPSULE WAS NECESSITATED BY REASON OF LOSS OF SIGHT
IN THE FELLOW EYE.

BY SAMUEL HORTON BROWN, M.D.,
PHILADELPHIA, PA.

The clinical report herein presented relates to no extremely unusual condition, but emphasizes the necessity of judging cases upon their individual merits rather than of placing cases in groups and restricting the separate cases to routine procedure. In June, 1907, a laboring man, or rather a man belonging to the class of unskilled labor, aged 70 years, presented himself for treatment by reason of failing vision.

Examination of the right eye showed incipient cataract. The vision was 4/150 but with a lens (—S.7.00) it could be brought to 4/80. The tension was low (—1). It was possible to perceive a posterior staphyloma and vitreous opacities. The left eye showed vitreous opacities and posterior staphyloma. The tension was likewise low (—1). The vision was 3/100 and by a combination of lenses (—S.6.00 —C.1.00 axis 90) was increased to 5/15. A near point at 30 cm. for the 0.75 m. type was produced by the addition of +S.5.00 to the distance correction. Without the distance correction, he was able to perform the same near work. Owing to an inability to afford two pairs of glasses or bifocals, only distance lenses were ordered. An optician's mistake necessitated the patient being without glasses for a period of ten days, during which period it was thought well to administer bichloride

of mercury, gr. 1/20, and extract of belladonna, gr. 1/10 three times daily after meals.

About two months after his original visit, he was able to procure glasses that afforded him comparatively useful vision. The glasses were brought to me to be neutralized and were found correct as ordered. On the same afternoon, however, before having worn the glasses, the patient was taken with vertigo and had a fall. Upon recovery from the shock of the same, his left arm was found to be very weak, and the vision in the good eye (the left) was found much impaired.

With correction vision could not be brought above 5/100; close vision was lost even with lenses and there was a quadrant of the field (left lower) in which there was no vision. Vitreous opacities were marked and there was distinct blurring of the disk, and evidence of changes in the nerve. Under the influence of mercury and iodides and strychnine, the vision in the left eye fluctuated but maintained a downward course, so that at the end of two months the vision of the left eye was reduced to perception of gross objects and movement of fingers at one foot. Lenses afforded no improvement. The pupil became dilated and immobile and the vitreous opacities increased.

Examination of the right eye at this time showed cataract maturing. Vision was 5/60? —S.6.00=5/60. The patient's intellect was not clear and the discrepancies in the vision may be attributed to his memorizing the letters from time to time. The tension was low and there was an increase in the vitreous opacities. By reason of the man's social condition, which necessitated his working for his support and that of his wife, a consultation was had with Dr. Frank Fisher, of Wills Hospital, Philadelphia, to determine the advisability of removing the immature cataract in the diseased right eye. This was decided upon, but for some peculiar personal reason the patient objected and forfeited the bed assigned to him at Wills Hospital.

He was not seen again for six weeks, at which visit his vision was found to be 5/100 doubtful in the right eye and nil in the left eye. Efforts to get him into Wills being unsuccessful on account of the late season, he was admitted to the Medico-chirurgical Hospital through the courtesy of Dr. L. Webster Fox, who performed simple extraction of the lens in the capsule. There was some loss of vitreous but the patient made an uneventful recovery, and was discharged eleven days after the operation.

Examination of the eyes thirteen weeks after the operation shows vision 5/60; with +S.4.00=+C.2.25 axis 180=5/7.5? and

with the addition of $+S.3.75=0.50$ at 35 cm. A working glass had been ordered within two months after the operation as it was imperative that the patient should get to work to hold his position. It was deemed advisable to let him work as the eye was in good condition, and in view of the "hard times" it was necessary for him to do all he could. This case illustrates well the necessity of persistent efforts even in the presence of the most hopeless outlook.

EXPERIMENTAL RESEARCHES CONCERNING THE
VALUE OF THE "LEUKINS" FOR THE CURE
OF INFECTIOUS INFLAMMATIONS OF
THE CONJUNCTIVA.*

By DR. RUDOLPH SCHNEIDER.

(Graefe's Archiv, Vol. LXXIII, No. 2, p. 223.)

"Leukins" are bactericidal substances given off by a vital secretory activity of the polymorphonuclear leukocytes, and are so called by the author. They differ from alexins in many respects, especially by their thermostability and by exerting an influence on micro-organisms against which the serum is ineffective.

In studying the influence of these substances in the cure of infectious conjunctivitis, the author determined first what, if any, bacteriolytic bodies exist in the normal lacrimal and conjunctival fluids. A long series of experiments made on various pathogenic bacteria with the secretion collected from the conjunctival sac by means of small pledges of absorbent cotton—of course under the necessary precautions—leads the author to the conclusion that an active disinfecting influence of the tears does not play any role in the sterilization of the conjunctival sac. The regulation of the bacterial contents of the conjunctival sac must therefore be brought about by mechanical means only (movements of the lids, current of lacrimal fluid into the nose).

Being satisfied that the lacrimal fluid does not possess the frequently assumed bactericidal properties the author turns to the influence of astringents and antisepsics on the bactericidal quality of the conjunctival fluid. The action of these empirically found remedies was formerly explained by the formation of an

*Extract made by A. A.

eschara, the shedding of which would remove with it the enclosed superficial bacteria and by a possible antiseptic action of the astringents.

Lately the value of the astringents has been explained in a different way and it was especially Zur Nedden who pointed out the possibility that astringents might increase the bactericidal substances of the products of inflammation.

Schreiber experimented especially with *argentum nitricum*, *protargol* and *zincum sulfuricum*.

In using a 1 per cent. solution of silver nitrate in the conjunctival sac of rabbits he found as the characteristic effect, aside from the eschara formation, a rapid and intense emigration of leukocytes. With such conjunctival fluid he experimented on different micro-organisms. His conclusion is that it can hardly be doubted that the conjunctival secretion after instillation of silver nitrate solution owes its bactericidal action to the leukins contained in it. And further on he states that silver nitrate in a 1-10 per cent. solution suffices to produce this bactericidal action, and that although stronger solutions produce it more rapidly, there is not much difference in the effect. Whether this is the same in the human conjunctiva has to be proven.

Of the 8 praeparations which are at present used in order to replace silver nitrate on account of its escharotic and superficial action and irritation to the conjunctiva, protargol was chosen in order to study its leukin producing properties and was found to act like silver nitrate.

In reviewing the properties usually vouchsafed to the silver salts he states that the so-called astringent—bloodvessel constricting—action does not exist and that a 1 to 2 per cent. *argentum nitricum* solution produces no constriction of the bloodvessels, or if such occurs it gives way at once to a hyperæmia. The eschara is very superficial and while some germs may be shed together with it, no radical effect is thus obtained. The same is the case with the antiseptic action of silver nitrate, it is also superficial and quickly bound by the albumen of the cells and neutralized by the sodium chloride.

Thus little remains of what was looked upon as the therapeutic effect of silver nitrate. His solution is that the value of the silver nitrate treatment in infectious inflammations of the conjunctiva is due to the emigration of leukocytes and the formation of leukins. Clinical observation will have to find out what practical value these experiments may represent; however, one thing

is undoubtedly of importance, namely, that weaker solutions which cause no eschara to form and no such irritation and damage to the conjunctiva as those of $\frac{1}{2}$ to 1 per cent. are sufficient to produce leukins, that is the beneficial effect.

The leukocytes do not spontaneously excrete—either living or dead—their active substances. They must be irritated. *Argentum nitricum* does not only attract the leukocytes, but it induces them also to give off the leukins.

The last remedy with which Schreiber experimented is the sulfate of zinc. Although used for a long time in $\frac{1}{2}$ to 1 per cent solutions, this remedy has gained some new prominence since it was found to be the best remedy in the Morax-Axenfeld diplobacillus conjunctivitis. Its action not being fully understood since in vitro it did not show any marked bactericidal properties, Zur Nedden assumed that the hyperæmia produced by sulfate of zinc in the conjunctival bloodvessels and the consequent secretion of bactericidal substances, produce the effect which we get from zinc treatment.

Schreiber also studied the formation of leukins after zinc application. He finds that sulfate of zinc is in every respect a much milder agent than the nitrate of silver, but instilled into the conjunctival sac it, also, provokes with certainty the formation of leukins. Its excellent curing quality in diplobacillus conjunctivitis can probably not be called a specific one, and lies, perhaps, more in the lability of this germ; it may be, that alexins, which also influence the diplobacillus unfavorably, may help in the effect of the zinc therapy. Since, however, conjunctival secretions after instillation of zinc act also as bactericides on other germs, it is plain why this salt may be equally beneficial in other forms of conjunctivitis.

Having, further, proven that oxycyanate of mercury (1:1500) as an antiseptic is no better than the physiological solution of sodium chloride, and that pyocyanase does not render the conjunctival secretion active, he made some experiments on the human conjunctiva with silver nitrate and zinc sulfate. In man, too, these agents rendered the conjunctival fluid bactericidal. Schreiber does not hesitate to attribute this result, also, to the formation of leukins. These, then, are in man, too, an effective means of defense against various bacteria.

The results are finally summed up again as follows:

The normal secretions of the lacrimal gland and conjunctiva contain no bactericidal, haemolytic or opsonizing substances.

After instillation of silver nitrate, protargol and zinc sulfate leukocytes wander into the conjunctival sac and under the influence of these agents secret their bactericidal substances, the "leukins."

The curative action of the astringents depends not so much on the formation of an eschara and on their disinfecting quality, as especially on their effectiveness in provoking the formation of leukins.

The destruction of the infectious germs taking place outside of the cells is due to the leukins and not to the presence of alexin which is ineffectual against most of the micro-organisms which cause conjunctivitis and is excreted by the blood only in very small quantities after the application of silver or zinc.

Although I consider the appearance of leukin in the conjunctival fluid as the most important factor on which the curing action of silver nitrate and zinc sulfate depends, I do not want to say that with the formation of leukins and an eschara and their small disinfecting quality the therapeutic actions of these metals are exhausted. For, since aside from the known defensive means of the organism others hitherto unknown are likely to exist, it is not impossible that silver nitrate and zinc sulfate may possess further tissue altering influences.

The fact that the action of the astringents which in the eye leads to an increased local resistancy and cure, is chiefly recognized by the formation of leukin, proves that leukin may by right be put side by side with blood alexin and phagocytosis as the main arms of natural resistance.

For the therapy of the infectious inflammations of the conjunctiva, it follows that in the struggle against the infectious irritant we must strive to produce a large quantity of leukin.

IMPORTANCE OF CORRECT DIAGNOSIS OF DISEASES OF THE EYE.

A. E. Davis (*Med. Record*, Jan. 29, 1910) believes that in many affections of all the structures of the eye intestinal toxemia plays a more or less important role. In such cases the diet should be carefully regulated and intestinal antiseptics administered. Diseases of the nasal accessory sinuses also cause troublesome conditions of the eyes, among which are asthenopia and conjunctivitis. These are quickly relieved by the proper treatment of the sinus disease.

A NEW PATHOGENESIS OF OCULAR
PHLYCTENULES.*

DR. L. WEEKERS,

LIEGE.

Phlyctenules are still called scrophulous. Even those looking upon scrophulosis as a masked tuberculosis do not consider a relation between phlyctenules and tuberculosis as established. Axenfeld has shown that there is no histologic similarity between a tubercle and a phlyctenule, and Leber by transplanting phlyctenules into the anterior chamber of rabbits could not produce a tuberculosis.

Leber, however, reached the conclusion that phlyctenules might be due to dead tubercle bacilli, and experiments by different authors seems to have strengthened this theory.

To clear up these points Weekers tried to find how frequent tuberculosis is in cases of phlyctenules, and has not only made complete clinical examinations of each case, but also applied von Pirquet's skin reaction test on 156 children and 58 adults. He found that the female sex is more prone to phlyctenular affections than the male. Of the 156 children 116 were girls and of the 58 adults 40 were females.

As hereditary antecedents he found tuberculosis in 56 per cent. He, also, is convinced of the possibility of a congenital tuberculosis, like a congenital syphilis.

In trying to establish the percentage of active tuberculosis in children with phlyctenules, he has been able to do so in 36 per cent. He is satisfied that this percentage is in reality below the truth since the glandular tuberculosis which is predominant in children cannot always be demonstrated, as for instance when the affected glands are the tonsils, the bronchial or mesenteric glands.

The von Pirquet test was positive out of these 156 children in 142 cases (91 per cent). The same test applied to a series of children under treatment for various other eye affections was positive only in 11 per cent.

From these tests we glean the fact that almost all of the phlyctenular children are tuberculous. This not only sheds light on the pathogenesis of phlyctenular eye affections, but warns us not to be satisfied with local applications alone.

Bulletin de l'Academie royal de médecine de Belgique, 4th series,
Vol. XXIII. No. 9.

*Extract made by A. A.

On the other hand these tests tend to explain somewhat the nature of scrophulosis of which the ocular phlyctænules are really the purest symptom. Although most observers are disposed to admit that scrophulosis breaks the ground for tuberculosis, very few of them suspect that there is such a frequency of tuberculosis with phlyctænular disease.

Phlyctænular affections in the adult have thus far been little studied. Some authors deny their occurrence past the ages of 15 years.

In the adult there is usually a solitary phlyctænule situated at the corneoscleral margin or on the conjunctiva of the same clinical character as those seen in children. Relapses are rare. In some cases the individual had suffered in the same way in childhood. Of Weekers 58 adults 48 per cent had hereditary tubercular antecedents, in 27 per cent tuberculosis was established clinically and in 55 per cent. the von Pirquet test was positive.

It is not likely that the phlyctænule is a local focus of tubercle bacilli. Is it not more rational to look upon it as a "toxi-tuberculide?" Its likeness to certain skin tuberculides like lichen scrophulosorum is striking. In reality both are found only in patients with great probability infected with the bacillus of Koch. Yet the bacillus has been found only in very exceptional cases and only in the local eruption. The skin tuberculides must be looked upon as produced by toxins. In fact tuberculin containing no formed elements injected subcutaneously has been observed to produce erythematous eruptions and sometimes lichen scrophulosorum. Here then we have toxi-tuberculides experimentally produced by a positive skin reaction which appear remarkably like spontaneous tuberculides. However, in these cases, tubercle bacilli have sometimes been demonstrated. Weekers does not consider this an objection to his theory of toxi-tuberculides, since tubercle bacilli circulating in the blood may become lodged at cutaneous points which have previously been affected by toxins.

The epithelium of the conjunctiva is a continuation of that of the skin, embryologically skin and conjunctiva are the same. We know that tuberculous skin lesions are polymorphous and affect epidermis, dermis and hypodermis. Why should it be astonishing that there are also tuberculides of the conjunctiva.

The phlyctænules develop as shown in tuberculous children. In the absence of tubercle bacilli which would give the only positive proof, the subcutaneous injection of tuberculin makes the diagnosis almost certain when the local reaction takes place at the site of a suspected lesion.

Such a reaction takes place at the site of ocular phlyctenules. Weekers has made such a test in 10 cases, in 8 of these the local reaction appeared.

In some cases phlyctenules are seen to appear after a positive general reaction and such phlyctenules cannot be distinguished from spontaneous ones.

Histologically no difference can be found between these two forms of phlyctenules. Phlyctenules after ophthalmoreaction can therefore be looked upon as toxi-tuberculides experimentally produced.

In this connection it is well to remember that skin eruptions due to toxins are frequently due to drugs or alimentary intoxication, and have been produced by staphylotoxin; recently roseola has been produced by typhus toxin.

Weekers relates 3 cases in which, out of 5 with old corneal scars from previous phlyctenules experimented upon, the ophthalmoreaction brought about an eruption of phlyctenules.

Later on he recalls to our mind that in the vast majority children suffering from phlyctenules are subject to a general taint, they show especially the symptoms of what has been called scrophulosis, yet in general there seems to exist no definite explanation of the pathogenetic relation which unites the ocular affection to the general diathesis.

Considering the two diatheses, scrophulosis and tuberculosis, he draws attention to the fact that before the knowledge of the tubercle bacillus tuberculosis meant simply phthisis or consumption. Since then the entity tuberculosis has become very considerably enlarged. The diagnosis always demands the demonstration of the tubercle bacillus. Tuberculosis now-a-days is looked upon as a toxic infection with polymorphous clinical expressions, with multiple and varying reactions. It is not always a grave destructive affection; there is a generalized tuberculosis, others are localized, and tubercular manifestations have been found in the most different organs as the kidney, liver, skin, etc.

He thinks, that having tried to prove that the phlyctenular eruption must be classed as a toxi-tuberculide and therefore belongs to tuberculosis, his researches may throw some light on the nature of the scrophulous diathesis. In fact, he proves that scrophulosis is in reality tuberculosis.

CORRESPONDENCE.

UNITED STATES SENATE,
Washington, D. C.

March 19, 1910.

Editor American Journal of Ophthalmology.

My Dear Sir:—At the instance of various authorities interested in promoting the national health, I have prepared and will deliver next week a speech on Senate Bill No. 6049, favoring a "Department of Public Health", and I send you enclosed an advance proof.

It is greatly desired by the Chairman of the Legislative Committee of the American Medical Association and by the Committee of One Hundred to stimulate public opinion in favor of the principle of a Department of Health instead of a Bureau which we now have.

The active co-operation of medical men, health societies, etc., impressing upon the Members of Congress and Senators the importance of this subject, urging directly their support for a Department of Public Health, is essential to its success. For twenty years those interested in public health have in vain tried to get favorable action on a Department of Health.

I should be glad if this subject matter meets your approval, to have you give it such publicity as you think its importance justifies.

Yours very respectfully,

R. L. OWEN.

We herewith give to our readers the finishing sentences of this bill so full of interest to our whole country, and especially to the medical profession, with the hope that it will speedily become a law.—[EDITOR.]

This is a question of vast national importance. In eight years we have increased our expenditures over the average of preceding years by the huge sum of one thousand millions for the army and navy, and are spending 70 per cent. of the national income to cover the obligations of past wars and the preparation for possible future war, or about seven hundred millions per annum. But for war on preventable disease now costing us infinite treasure in life, efficiency, and commercial power and prestige we spend nothing and do not even employ the agency we have in an efficient manner.

In the name of the people and in the name of the American Medical Association, whose members are the faithful and self-sacrificing guardians of the health of our people, and in the name of the Committee of One Hundred, of the American Federation of Labor, of the National Grange, and of the various health boards of the 46 States of the Union and of the great body of learned men desiring improved sanitation and the application of the improved agencies of preventing disease, disability, and death, I pray the Senate to establish a department of public health.

The principle of the bill meets the general approval of the public-health societies and of the medical associations of the United States, and there should be no difficulty in perfecting this bill and impressing upon the country the importance of organized effort to control the ravages of tuberculosis, typhoid and malarial fevers, bubonic plague, and other preventable diseases, which inflict such enormous injury upon the people of the United States, impose such vast, but needless, human misery and pain, with great financial loss and loss of prestige and power.

A commercial nation will not be unmindful of the commercial value of the saving of life and efficiency possible, which is worth \$3,000,000,000 per annum.

A humane nation will not fail to act when it is known that we could save the lives of 600,000 of our people annually, prevent the sickness of 3,000,000 of our people per annum, who now suffer from preventable disease, and greatly abate the volume of human pain, misery, and death.

I trust, Mr. President, that the Senate may not fail to take action in regard to this matter at the present session.

ÆTOLOGY OF PHLYCTÆNULAR EYE LESIONS.

A. Schütz and R. Videky (*Wiener Klinische Wochenschrift*, Jan. 6, 1910) contend that phlyctaenular eye lesions are due to the exudative diathesis or to tuberculosis. Cases due to the former cause can be cured by strict dieting, while in the tuberculous form measures directed toward this constitutional disease should be employed. They insist upon the alimentary origin of many of these cases and point to the fact of the beneficial influence the restriction of eggs and milk has upon the course of the disease. During convalescence the regulation of the diet is of great importance, as with improper diet old lesions are likely to get worse and new ones to develop. They base their views upon 200 cases of phlyctaenules treated during the past two years.

MEDICAL SOCIETIES.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, January 27th, 1910.

The President, Dr. G. A. Berry, in the Chair.

*Multiple Superficial Atrophic Areas of Irides in old Kerato-Iritis
of Inherited Syphilis.*—Mr. N. Bishop Harman.

A. L., a female, aged 9; the subject of inherited syphilis, was practically blind owing to the effects of a severe kerato-iritis. In the right eye there was much interstitial scarring, particularly in the lower quadrant; the iris was bound down to the lens capsule, and there was also a fine strand adherent to the cornea above. In the left eye similar changes existed, but a small part of the pupillary border of the iris was free upwards and inwards. Both irides showed a number of brown oval and round spots, the color being due to the pigment layer showing through atrophic holes in the overlaying stroma; the areas varied greatly in size, from .5 mm. in diameter to 1 or 2 mm. There were 22 holes in the right eye and 13 in the left.

*Exophthalmos and Facial Deformity (as in Oxycephaly) without
deformity of the Skull Cap.*—Mr. N. Bishop Harman.

S. F., a girl, aged 10, was born of Jewish parentage, who showed no abnormality either in themselves or their other children. The patient showed the typical physiognomy of oxycephaly so far as the eye and face went, but there was no head deformity. Proptosis was especially well marked, and the lids only just met over the globe; some divergence of the optic axis existed, but no nystagmus. The child did not know her letters, but her vision appeared to be good and the fundus of each eye was normal, and the discs were well shaped and of good color. The head was rather small, but its contour was quite normal, and there was not the slightest suggestion of elevation along the frontal or sagittal sutures or anywhere else, nor was there any asymmetry. The body, hands, and feet were quite normal.

Hæmorrhage at the Macula.—Mr. M. L. Hepburn.

Charlotte S., aged 41, was the same case as that shown at the Society's meeting on December 9th, 1909. During the interval the hæmorrhage had undergone important changes; the blood had been completely absorbed, only a faint suspicion of redness on the temporal side still remaining; the whole area had become white, and, although retaining its original circular shape, was considerably smaller than the disc and had a slightly crenated border. The vision was only 2/60. The mode of disappearance of this hæmorrhage after six weeks' interval pointed to the fact that the view expressed regarding the origin of the blood, viz., from the choroidal vessels and in the substance of the retina, was the correct one.

Sarcoma of the Choroid.—Mr. G. Winfield Roll.

E. C., female, aged 64, came complaining of failure of vision in the left eye for six months; both eyes were normal in external appearance, and the tension was also normal. The right vision was 6/6, and the left perception of light. There was a defective visual field in the left eye, with some vitreous opacities and a detachment of the retina near the optic nerve concealing part of the disc; in places the retinal detachment was filled out and tense, and there were no folds; some flame-shaped hæmorrhages were also present. Both eyes showed some patches of choroiditis, but the areas were free of pigment; no new vessels could be seen anywhere. Pathologically a deeply pigmented sarcoma of the choroid was found which showed no evidence of invading any of the neighboring structures, but was growing laterally along the lines of least resistance, and the membrane of Bruch was intact.

A Case of Lacrimal Tumor.—Mr. Ormond.

Catherine S., aged 59, came, in May, 1907, complaining of "something soft" over the right eye. The vision in this eye was 6/9, and that of the left 6/6. Iodide of potassium was administered, but the swelling increased in size. In October, 1907, a piece was removed and subjected to microscopical examination, when it was pronounced to be ordinary hypertrophy of the lacrimal gland. In June, 1908, there was proptosis of the right eye which was displaced downwards and inwards, and the movement upwards was limited. There were some enlarged veins in the skin of the upper lid, and the whole of the conjunctiva was red and œdematosus, while the pre-auricular gland was slightly en-

larged. Exenteration of the orbit was performed, and the enlarged gland also removed. Later on tumors appeared in the upper arm, abdomen, and thigh, and in June, 1909, one situated just below the hip was removed.

Peculiar Retinal Changes due to Traumatism.—Mr. C. Blair.

F. R., aged 52, showed in the right eye (the vision being finger counting only) a bluish-white, well defined, somewhat raised oval area situated in the macular region, and below this was a white, broad, irregular band; above and internal to this was an area of reticular appearance formed by a network of whitish deposit, and external to this was one large white patch with many scattered white dots round it. The retinal vessels were superficial to the patches.

Granuloma or Papilloma of the Conjunctiva.—Mr. C. Wray.

J. M., aged 15, came for treatment in April, 1909; and there appeared a sessile growth of a papillomatous nature, the size of a small pea, springing from the caruncle and inner surface of the lower lid immediately behind the punctum. The growth was excised and found to be an innocent papilloma; but after a few months a good deal of granulation-like growth was seen under the upper lid involving the inner third.

Scotomagraph with Stereoscopic Fixation.—Mr. J. H. Tomlinson.

This instrument, though primarily designed for mapping out blind or anaesthetic areas, can be used for general perimetry. The test object is a second image of the fixation point, obtained by reflection from a long narrow mirror hinged near the eyepiece of the instrument. The angular position of the second image, as seen by the retina, is determined by the position of the mirror which can be rocked about its hinge through a device inside the instrument. The whole apparatus can be rotated about its axis so that while the fixation point remains unmoved the second image makes a circular excursion, thus enabling the method of Bjerrum to be employed in testing for glaucoma. An automatic registration is obtained by means of a needle which is carried by the mirror and extended pneumatically by a mechanism similar to that used for operating a photographic shutter. The second eye looks down a tube at a small spot the same size as that already viewed by the eye under examination; the brain interprets this as the same spot and stereoscopic fixation is thus obtained.

A New Simple Ophthalmoscope.—Mr. Priestley Smith.

Described in detail in the February number of the *Ophthalmic Review*.

PAPERS

Note on a Case of Bilateral Ophthalmoplegia Externa in an Infant.—Dr. F. E. Batten.

This paper was accompanied by photographs illustrating the condition. In March, 1909, the child, aged 10 months, attended Great Ormond Street with the history that a discharge from the right ear showed itself fourteen days after birth and ceased when the child was 2½ months old. When 7 months old a squint was noticed, and at 8 months there was weakness of the right side of the face; one month later the head was drawn to the right, and some twitching of the muscles of the face observed. In all other respects the child was well.

In March, 1909, there was marked external strabismus and slight ptosis in both eyes, with almost complete paralysis of all the muscles supplied by the third nerve in the right side; a similar but less marked condition was seen in the left. There was no neuritis or optic atrophy, but slight weakness of the right arm and leg was present with constant rhythmical movements; knee-jerks were equal and active; there was no ankle clonus, but some craniotabes over the left parietal region was noticeable. Von Pirquet's reaction was positive, and tubercle bacilli were found in the cerebro-spinal fluid, and this was confirmed on several subsequent examinations.

In April, 1909, there were right-sided convulsions, and the child by this time was drowsy and had to be fed with a nasal tube, while the third nerve paralysis was complete. Death occurred in June, 1909, and post-mortem a tubercular mass was found on the surface of the cortex in the left occipital region with a large tumor of the same nature in the region of the optic thalamus and corpora quadrigemina.

Congenital Anterior Synechia with Buphthalmos.—Mr. M. S. Mayou.

F. K., aged 7 weeks, was the third child in the family, all of whom were alive, and well with this single exception. There was no history of instruments being used at birth nor vaginal discharge previous to labor, and no other congenital malformation was discovered. The mother noticed the left eye larger than the

right at birth. The child had obviously bad vision, there was well-marked nystagmus, and the right eye had eccentric fixation. The left eye was blind and buphthalmic, with a bombé iris, but the cornea was clear and there were no cracks in Descemet's membrane; the iris was closely applied to the back of the cornea, was atrophic, and showed white markings on its anterior surface; the pupil was small, round and inactive to light; the lens clear and well forward against the posterior surface of the cornea; no anterior polar cataract was present. Between the lens and the vitreous was a white mass with no vessels on its surface, and clinically the case resembled a pseudo-glioma.

The eyeball was excised and found to measure 1.5 cm. antero-posteriorly, and the cornea was 1.4 cm. across. The corneal epithelium was normal and the substantia propria of the cornea clear; the iris was adherent anteriorly and the pupillary margin had not separated off. Descemet's membrane covered the back of the cornea nearly up to the position where the iris was adherent, but this structure was absent in the position of the adhesion and over the whole of the pupillary area. The iris tissue actually at the adhesion was thicker than elsewhere, and resembled at this point more the substantia propria of the cornea than iris structure. The angle of the anterior chamber, the ligamentum pectinatum, and ciliary muscle were all ill-developed, and the suspensory ligament of the lens was absent. The ciliary processes were adherent all round either to the sides or posterior surface of the lens forming a pigmented diaphragm between the vitreous and the posterior chamber, and wherever these processes were united to the posterior surface at these points the ora serrata had not developed, but this was not the case when the ciliary process was attached to the sides of the lens. Posteriorly there was a gap in the lens capsule which was filled in by loose atypically developed fibrous tissue. The retina showed both the ganglion cell layer and the rods and cones badly developed, while near the disc were found rosette arrangements similar to those seen in glioma of the retina and microphthalmos. The optic disc exhibited a coloboma of the nerve sheath.

Mr. Mayou considered that the defects in the posterior part of the globe were due to failure of separation of the mesoblast forming the iris and the cornea; therefore there was no anterior chamber, thus leading to absence of filtration and so buphthalmos. The ciliary body was not displaced forwards owing to its attachment to the lens and the failure in development of the suspen-

sory ligament accounted for the adhesion of the ciliary processes to the lens. The anterior lenticonus was due to the lens being adherent to the cornea and thus being pulled forwards. Dragging of the ciliary processes produced rupture of the posterior capsule and so atypically developed fibrous tissue proliferated into the opening.

The other eye was amblyopic, and it is possible that some of the malformations seen in the retina in the one eye might also have been present in the other.

In the remarks that followed on this paper,

Mr. Collins said that this case proved that congenital anterior synechiae might be due to developmental defect apart from ulceration. He commented on the effect of non-development of the suspensory ligament in producing lenticonus. He said that the gaps in the posterior capsule were due not to rupture but to failure of development.

Mr. Parsons said that there were obviously many points in this case which were due to faulty development; he regretted the term buphthalmos, as intra-uterine inflammation often left very few signs of its previous existence, and having once occurred it might seriously interfere with the normal process of development. He agreed with Mr. Collins in his interpretation of the presence of gaps in the posterior capsule of the lens.

Mr. Coats considered that Mr. Mayou's case should be regarded as an entirely different type to the ordinary congenital anterior staphyloma, and for this reason he considered the term buphthalmus a good one. This case satisfied all Mr. Collins' points in regard to mal-development, but it was for this very reason that it should not be classed as a congenital anterior staphyloma such as those already described by himself and others.

Thursday, February 10th, 1910.

Vice-President, Mr. Hartridge, in the Chair.

Optic Atrophy and Oculo-Motor Palsy due to Intra-Cranial New Growth.—Mr. J. B. Lawford.

H. D., male, aged 40. Came to St. Thomas's Hospital in Nov., 1909, complaining of blindness in the left eye for three weeks, and failing sight in the right for the same time. The vision in the latter was 6/60, the pupils reacted well, there was moderate proptosis with defective movement downwards and inwards; the

fundus appeared healthy. In the left there was only perception of light with a dilated and inactive pupil, and only slight reaction to accommodation; there was some proptosis, and upward rotation was lost, while the upward movement was defective. The optic disc was markedly pale and the retinal vessels were reduced in size; sense of smell was lost. An X-ray examination revealed "rather deep erosion of the floor of the middle fossa of the skull; the pituitary fossa and sella turcica are destroyed." Since admission the condition has got steadily worse, so that the vision in the right was bare perception of light, and that of the left none whatever. All the other symptoms were more marked, and both the optic discs were pale.

Drawing of Episcleral Tubercler.—Mr. J. B. Lawford.

J. W., a male, aged 10, came to St. Thomas's Hospital on May 27th, 1902; the boy was one of ten children, eight of whom were living; a maternal aunt died of phthisis. This child had swollen glands in the neck and had suffered from sacro-iliac disease. In the lower temporal part of the right globe was a sharply-defined prominent nodule about the size of a split pea, covered with dilated veins. The nodule was adherent to the sclera. Another smaller nodule appeared between this and the limbus. On May 29th both were removed, and it was proved experimentally by inoculation that the nature of the growth was of tubercular origin.

Lenticonus Posterior with Opaque Membrane behind the Lens.—

Mr. E. Treacher Collins.

Irido-Cyclitis with Gross Keratitis Punctata.—Mr. N. Bishop Harman.

Cases from Families with Hereditary Anterior and Posterior Polar Cataract.—Mr. N. Bishop Harman.

The drawing was shown of these cases, but the patients themselves did not come to the meeting.

Posterior Polar Lens defect (? Lenticonus).—Mr. N. Bishop Harman.

John S., aged 66, came under treatment for failure of sight. The vision in both eyes was 6/60, and the nuclei of the lenses in both eyes were dense to focal illumination. The opinion was

expressed that this was really a case of nuclear sclerosis, and to this Mr. Harman agreed.

A New Form of Lantern for Testing Color Perception.—Dr. F. W. Edridge Green.

An Unusual Form of Retinal Disease.—Mr. A. C. Hudson.

Harold N., aged 9, came to the Central London Ophthalmic Hospital on Jan. 27th, 1910. There was no family history of any importance. When the child was one month old he suffered from spasmodic bronchitis ushered in by epistaxis and unconsciousness; at $2\frac{1}{2}$ he also had whooping cough. The vision in both eyes was 6/6 with +1.5. In the left eye at the lower middle portion of the fundus were a number of bright shining translucent plaques like white paint scattered about having no special relation to any particular retinal vessels and evidently on a more anterior plane; white lines appeared along some vessels in places. Mr. Hudson considered the cause of this condition was due to a haemorrhage which had taken place earlier in life and produced by irritation the changes which were present.

A Case of Bilateral Parotitis and Cyclitis.—Mr. E. W. Brewerton.

F. E., aged 17, came in Nov. 18th, 1909, with a rash on the face and arms; he had suffered for five days from a sort of net-tlerash, and as it was subsiding a hard lump appeared on the right side of the face about the size of a marble; soon afterwards a lump also appeared on the left side; and there was no pain or difficulty in masticating. Not long after the parotid swelling, both eyes showed a ciliary flush, and K.P. and posterior synechiae were discovered, which were very intractable to treatment and still going on.

Hole at the Macula.—Mr. R. Foster Moore.

H. L., aged 24, male, was struck in the left eye with a piece of wood, and three or four days later found he could not see properly; since that time there had been no change, and the eye was practically useless. For the last two months he had noticed the right eye getting dim, and all objects appeared cloudy. No history of syphilis or any serious illness. The vision in the right eye was 6/5 with +2sph., and 6/60 in the left. By ophthalmoscopic examination both eyes showed symmetrical changes at the

macula, occupying an area about $1\frac{1}{3}$ the size of the disc. In the right eye was a circular hazy oedematous area well defined and slightly raised at the edges with some small exudates on the surface. The left eye showed an affection of a similar nature, but here there was the appearance of bright red holes with shelving edges, and many whitish areas of all sizes scattered about in this region. Other parts of the fundus in both eyes were clear.

Connective-tissue Formation on the Disc.—Mr. L. Paton.

Rose C., aged 17, came with a very indefinite history; her right vision was 6/6, and that of the left counting fingers; the vision was gone in the lower nasal field. Projecting in front of the disc and forwards into the vitreous was a white shining mass seen best with a +10D. From the top of this several strands of connective-tissue projected further forwards still, and surrounding the central vein were a series of nodular semi-translucent masses seen best with a +6. There was sheathing of the retinal vessels in a few places and disturbance of the retinal pigment not far from the disc.

Granuloma (?) of the Conjunctiva.—Mr. C. Worth.

Frank D. had shown a pink spot on the left eye for eight months. Just on the sclero-corneal margin downwards and inwards there appeared a flat pad of conjunctiva in which, radiating from a common centre, were some vessels arranged like the ribs of an umbrella, and each rib had an afferent and efferent vessel. It was attached to the sclera by a small pedicle. No history was forthcoming to account in any way for this condition.

Electrical Method of Rotating Testing Block, in place of the Cords.—Mr. R. E. Bickerton.

Linear Opacity of the Cornea with Retinal Degeneration following Birth Injury.—Mr. E. E. Henderson.

Ivy W. showed in the left eye a straight linear opacity of the cornea situated in the deeper layers. On examining the fundus the whole of the nasal half was obscured by a large mass of bright shining fibrous tissue passed forwards as far as one was able to see.

? Epithelioma of the Cornea.—Mr. H. H. B. Cunningham.

The case was not shown, but a drawing was exhibited of a

man, aged 36, where both cornea were affected with large growth occupying about half of each cornea; and the question arose as to whether this was of an epitheliomatous nature.

Obstruction of Inferior Temporal Branch of the Central Artery of the Retina.—Mr. Arnold Lawson.

A month ago the eye was struck with an elastic chest expander, and the vision afterwards was fingers at 3 feet. Below the disc was a large patch of retino-choroidal atrophy exposing the choroidal vessels and the sclera; over this patch passed the inferior retinal artery with obviously no blood in it, and its origin was obscured by a patch of exudate.

Swelling near the Papilla of Doubtful Nature.—Mr. Arnold Lawson.

For two months there was a history of defective vision in the left eye, and three weeks ago a small swelling was first seen at the upper and outer part of papilla. The vision was correction was 6/18 and was best seen with a +2sph., while the summit of the swelling was most distinct with a +4. At the time of showing (Feb. 10th, 1910) the swelling had increased so that it occupied a concentric area round the lower and outer part of the circumference. There were no haemorrhages to be seen, and no view of the vessels was possible.

MALCOLM L. HEPBURN.

LACRIMAL GLAND TUMORS.

L. D. Brose (*Jr. A. M. A.*, Feb. 12, 1910), after reporting a case of adenoma of the lacrimal gland which was undergoing malignant change, discusses the classification of tumors of the lacrimal gland, their aetiology, the diagnosis and prognosis, and the methods of operation for removal. He states his conclusions thus:

All kinds of tumor formations, both of malignant and benign nature, are encountered in the lacrimal gland. In the main the growths are benign in character and of mixed type due to involvement of all the gland tissue, and, according to the preponderance of tissue overgrowth, histologically we may designate them as fibroma, adenofibroma, fibroadenoma or adenoendotheliofibroma. After thorough operative removal we are justified in the majority of cases—this especially where the tumor has been of slow growth—in giving a favorable prognosis, recurrence being the exception.

ABSTRACTS FROM MEDICAL LITERATURE.

BY J. F. SHOEMAKER, M.D.,

ST. LOUIS, MO.

IRITIS COMPLICATING MORAX-AXENFELD CONJUNCTIVITIS.

Handford McKee (*The Ophthalmoscope*, August, 1909) reports a case of iritis which had received both anti-rheumatic and anti-syphilitic treatment for several weeks with no relief, the patient suffering greatly with pain and loss of sleep. As there was a decided conjunctivitis with muco-purulent discharge present, internal treatment was stopped and the conjunctivitis was treated actively with solutions of sulphate of zinc, bacteriological examination have shown typical Morax-Axenfeld diplobacillus present. The conjunctival sac was thrice irrigated with a quarter per cent. solution of sulphate of zinc for ten minutes each time and the patient instructed to instill some of the same solution in the eye every two hours and to continue using a one per cent. solution of atropin three times daily. In two days time there was marked improvement of the iritis and the conjunctivitis was much less severe. In one week the iritis had subsided and the atropin was stopped. The zinc solution was continued for another week when the patient was discharged cured.

METASTATIC GONORRHœA CONJUNCTIVITIS: DEMONSTRATION OF THE GONOCOCCUS IN SMEAR AND CULTURE.

Handford McKee (*The Ophthalmoscope*, July, 1909) reports a case of metastatic gonorrhœal conjunctivitis in which, after repeated efforts, he found the gonococcus in a smear made and also succeeded in growing it upon a culture medium of haemoglobin-agar. He calls attention to the following interesting points in the case:

"The retropulsion of the old writers was very definite; although urethral discharge had been present from three to four months, with the onset of the eye symptoms the discharge stopped. Subjective symptoms were present from three to four days. The onset of the conjunctivitis was indefinite, and simultaneous in both eyes, following sexual excess. The previous history of the

patient was good, and, in particular, there was no rheumatism. The clinical picture and the course of the conjunctivitis, almost without treatment, were mild as compared with the exogenous type. The tendency of the conjunctivitis was to recur, and to remain a conjunctivitis, as it does in 65 per cent of the cases. The rheumatism occurred shortly after the conjunctivitis, and ran a typical course. Our interest, however, in the present case centers around the bacteriological report. As has been stated, some writers give the absence of the gonococcus from the secretion as an important point in differential diagnosis, and attribute the metastatic inflammation to a toxin. More likely, the gonococci were present, but owing to faulty methods, were not found. The organisms must necessarily be few in number, and a bacteriological report from the examination of one or two slides shows one how easily error may creep in. In this case eighteen slides were examined before any definite result was obtained."

"That I was able to cultivate the gonococcus I attribute to having seen the case in its early stage, and to having used media upon which the gonococcus would grow as profusely as would the contaminator. That I obtained it in pure culture was due to frequent transplanting for days when I really felt the task hopeless."

"Axenfeld says, 'Morax, in his exact bacteriological research, stated that scattered gonococci may be found in such cases; Parinaud made the same observation, and their results were confirmed by van Moll. We must not, therefore, conclude from a negative examination for gonococci that the inflammation is due to a pure toxin metastasis, and not metastasis of the organisms themselves, though the former cannot definitely be excluded. Certain proof, however, is not yet available.'"

"We believe that the present case makes proof available that metastatic conjunctivitis is not due to a mixed infection, that it is not caused alone by the gonotoxin, but that it represents a true metastasis of the gonococcus."

EXPERIMENTS ON THE GROWING EYE.

Wessely (*Münchener Medizinische Wochenschrift*, Nov. 2, 1909) considers first the influence exerted upon the growth of the eye by different operations that reduce the tension of the globe, such as iridectomy, iridencleisis, and sclerotomy, performed on a large number of newly born rabbits, and finds that the size of the eye is greatly influenced by them. To determine the influence of the tension of the zonula upon the growth of the lens experi-

mental colobomata of the lens were produced, and this revealed a hitherto unrecognized dependence of the shaping of the lens upon the tension of the zonula. Experimental production of central cataract demonstrated an extensive power of regeneration in the lens of a new born animal, a regeneration through growth. After the dissection, swelling, and regeneration of these lenses it was noticed that the size of the eye was permanently less than that of the control eye, showing that the definitive size of the eyeball and indirectly of the orbit depends greatly upon the size of the lens. This fact, hitherto unknown, casts a new light on the connection between microphthalmos and congenital cataract as well as on the treatment of the latter. Experimental production of glaucomatous, or buphthalmic enlargement of the growing eye by causing a great swelling of the lens so that the angle of filtration was totally occluded demonstrated the importance of the outflow of the intraocular fluids through the filtration angle. Although the angle was totally occluded a very small iridectomy sufficed to check the further enlargement of the eye as compared with one in which the operation had not been performed. To determine the influence of the ocular muscles upon the growing eye tenotomies were performed. Tenotomy of the four recti was followed by a lengthening of the axis of the eyeball and the production of myopia. Tenotomy of the superior and inferior recti, but not of the lateral muscles, resulted in the production of an astigmatism of 3 to $3\frac{1}{2}$ dioptres with the vertical meridian the more refractive.—*N. Y. Med. Jour.*

GLARE, ITS CAUSES AND EFFECTS.

J. Herbert Parsons (*The Lancet*, Jan. 22, 1910) states that the fundamental point of glare is physiological, it being largely an uncomfortable sensation. There is a wonderful adaptability of the eye to varying degrees of light and if conditions are favorable small print can be read with ease by strong or feeble light. It has been demonstrated by experiment that the sensitiveness of the retina to impressions of light can be very greatly increased by protecting the eye from all light for a time. This sensitiveness reaches its maximum about half an hour after an eye has been lightly bandaged so as to exclude all light, a glimmer of light being recognized then that could not be seen under ordinary conditions. On the other hand exposure to bright light lessens the sensibility of the retina. This constant variation in the sensibility of the retina is termed retinal adaptation and it serves

a most useful purpose. When the retina is very sensitive as in dark adaptation, bright light produces discomfort or even pain. The condition of adaptation of the retina, therefore, must be considered an important factor in the production of glare, although it is not the only one.

The effects of glare may be classified under two groups. In the one the effects are slight and of brief duration. In the other they are more severe, last longer and may even be permanent. With moderately intense illumination dazzling results, which, while it produces discomfort and if continued too long even pain, does not cause any serious trouble. The pain is due to excessive action of an inadequate protective mechanism. In the second group of cases the serious effects are usually due to the intensity of the stimulus, which often is exceedingly rapid in its action, as when a powerful electric current is short-circuited. The visual defects caused by intense stimulus are of different grades. When the blurred spot is quite transient it may be considered physiological while if the intensity of the light was greater or of longer duration the blurred spot persists and may last permanently, when it is known as a scotoma. These scotomata are associated later with anatomical changes in the retina—pigmentation in the macular region, etc.,—where they are caused by the greatest degrees of intensity. Such conditions are not infrequently found in cases of visual defects following observations of eclipses of the sun with unprotected eyes. Prolonged exposure to the sun at sea and in the tropics is sometimes followed by night blindness. As these cases present in a marked degree the effects of retinal exhaustion they are of considerable interest.

THE DIFFERENTIATION OF THE DIPHTHERIA BACILLUS FROM ORGANISMS MORPHOLOG- ICALLY SIMILAR.

Carl Fisher (*Trans. Am. Oph. Soc.*, 1909) believes that the evidence at present rather indicates that the true diphtheria bacillus and the different forms of pseudo-diphtheria bacilli are distinct species rather than that the latter are simply variants of the true diphtheria bacillus. He suggests, tentatively, the following terminology for guidance in practical work:

Bacilli corresponding morphologically to any of Westbrook's types:

I. Virulent, virulence counteracted by antitoxin of diphtheria—*diphtheria bacillus*.

II. All others—*pseudo-diphtheria bacilli*.

(a) Virulent, virulence not counteracted by diphtheria anti-toxin—*virulent diphtheroid bacilli* (Ruediger's).

(b) Not virulent.

1. Solid staining protoplasm, not acid-producing—*Hofmann's bacillus*.

2. Granular and barred (rarely solid) protoplasm—*diphtheroid bacilli*, including "xerosis", non-virulent diphtheria and all other diphtheroid bacilli.

The results he obtained with the use of Knapp's dextrin-saccharose fermentation test are of considerable interest. He suggests these conclusions:

1. The diphtheria bacillus cannot be identified accurately by its morphology and its cultural characters alone.

2. True diphtheria bacilli always ferment dextrin within forty-eight hours and never saccharose. To this extent Knapp's results are confirmed. This reaction, however, is not distinctive of the virulent bacillus diphtheria, since it is also given by certain non-pathogenic organisms having the same morphology. Out of 13 unselected cases which fermented dextrine, 5 were totally avirulent.

3. Since bacilli which fail to ferment dextrin are much more commonly encountered, the fermentation test would, in the majority of cases, be conclusive. Practically it is of little value on account of the necessity of obtaining the bacilli in absolutely pure culture.

4. Animal inoculation is, at present, the only reliable practical method of identifying the diphtheria bacillus. To exclude the virulent diphtheroids, a guineapig immunized with diphtheria antitoxin must be inoculated also.

5. In practice, on account of the necessity of early treatment, the diagnosis of diphtheria should be based chiefly upon the clinical appearances and symptoms. Importance should be given to the microscopic examination only when it is negative. An erroneous early positive diagnosis of diphtheria is unavoidable in a large number of cases. To avoid unjustifiable quarantine, and as a guide to subsequent treatment, animal inoculation should be carried out in all cases in which the diagnosis of diphtheria is made.